USER MANUAL

MODEL 1065

Industrial Synchronous & Asynchronous Short Range Modem

PATTON Electronics Co.

An ISO-9001 Certified Company

Part# 07M1065-A
Doc# 058041UA
Revised 08/11/99

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(301) 975-1000
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1.0 WARRANTY INFORMATION

Patton Electronics warrants all Model 1065 components to be free from defects, and will—at our option—repair or replace the product should it fail within one year from the first date of shipment.

This warranty is limited to defects in workmanship or materials, and does not cover customer damage, abuse or unauthorized modification. If this product fails or does not perform as warranted, your sole recourse shall be repair or replacement as described above. Under no condition shall **Patton Electronics** be liable for any damages incurred by the use of this product. These damages include, but are not limited to, the following: lost profits, lost savings and incidental or consequential damages arising from the use of or inability to use this product. **Patton Electronics** specifically disclaims all other warranties, expressed or implied, and the installation or use of this product shall be deemed an acceptance of these terms by the user.

1.1 RADIO AND TV INTERFERENCE

The Model 1065 generates and uses radio frequency energy, and if not installed and used properly—that is, in strict accordance with the manufacturer's instructions—may cause interference to radio and television reception. If the Model 1065 does cause interference to radio or television reception, which can be determined by disconnecting the RS-232 interface, the user is encouraged to try to correct the interference by one or more of the following measures: moving the computing equipment away from the receiver, re-orienting the receiving antenna and/or plugging the receiving equipment into a different AC outlet (such that the computing equipment and receiver are on different branches).

1.2 SERVICE

All warranty and non-warranty repairs must be returned freight prepaid and insured to Patton Electronics. All returns must have a Return Materials Authorization number on the outside of the shipping container. This number may be obtained from Patton Electronics Technical Service at:

tel: **(301) 975-1007**;
email: **support@patton.com**; or,
www: **http://www.patton.com.**

NOTE: Packages received without an RMA number will not be accepted.

Patton Electronics' technical staff is also available to answer any questions that might arise concerning the installation or use of your Model 1065. Technical Service hours: **8AM to 5PM EST, Monday through Friday.**

2.0 GENERAL INFORMATION

Thank you for your purchase of this Patton Electronics product. This product has been thoroughly inspected by Patton's qualified technicians. If any questions or problems arise during installation or use of this product, please do not hesitate to contact Patton Electronics Technical Support at (301) 975-1007.

2.1 FEATURES

- Synchronous or asynchronous operation
- **Model 1065** supports data rates up to 64.0 kbps
- Two-wire/half duplex or four-wire/full or half duplex
- V.52 & V.54 test modes
- Equalization
- Anti-streaming timer
- Distances up to 12 miles (19.2 km)
- Point-to-point or multipoint
- Internal, external or received loopback clocking
- 2000 VAC transformer isolation & high speed surge protection
- Internal power supply
- Mono-color LED indicators

2.2 DESCRIPTION

The Model 1065 Industrial Short Range Modem operates 2-wire (half duplex) or 4-wire (full or half duplex), in synchronous or asynchronous modes, over unconditioned telephone lines. The Model 1065 supports bit rates up to 64.0 kbps. The Model 1065 operates in synchronous mode between the local and remote modems; when connected to an asynchronous RS-232 device, the Model 1065 SRM converts the asynchronous data to synchronous data.

The Model 1065 has several features to enhance overall performance: equalization, anti-streaming timer, transformer isolation to guard against data loss due to ground potential differences, and Silicon Avalanche Diode surge protection to guard against data line transients.

The Model 1065 features V.52 compliant bit error rate pattern tests and two V.54 test modes: local analog loopback and remote digital loopback. The operator at the local end may test both local and remote modems, plus the line, in the digital loopback mode. Both RDL and LAL modes can be controlled by a manual switch or via the V.24/RS-232 interface.

3.0 CONFIGURATION OVERVIEW

The Model 1065 is fairly simple to install and is ruggedly designed for excellent reliability: just set it and forget it. The following instructions will help you set up and install the Model 1065 properly.

3.1 CONFIGURATION SWITCHES

The Model 1065 uses 24 external mini DIP switches that allow configuration to an extremely wide range of applications. These 24 DIP switches are grouped into three eight-switch sets, and are externally accessible from the underside of the unit (see Figure 1). Since all configuration DIP switches are externally accessible, **there is no need to open the case for configuration.**

The configuration switches allow you to select data rates, clocking methods, V.52 & V.54 tests, word lengths, extended signaling rates, async. or sync. mode, 2- or 4-wire operation, anti-stream control and input impedance. The drawings, text and tables on the following pages describe all switch locations, positions and functions.

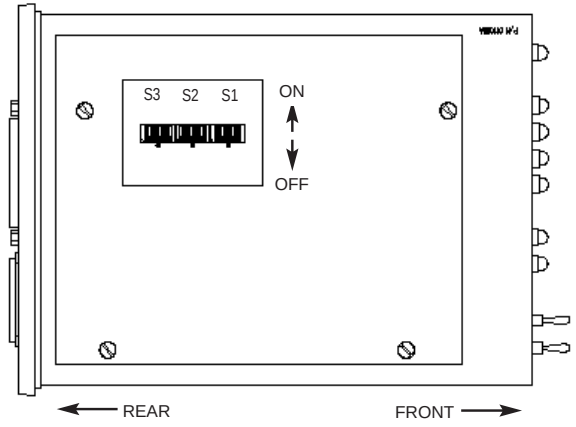


Figure 1. Bottom view of Model 1065 Series, showing location of DIP switches

The Model 1065 SRM has three sets of eight switches, yielding 24 total DIP switches. The three sets will be referred to as S1, S2 and S3. As Figure 2 shows, the orientation of all DIP switches is the same with respect to “ON” and “OFF” positions.

Figure 2. Close-up of DIP switches showing “ON” and “OFF” positions

3.2 CONFIGURATION SWITCH SET “S1”

The DIP switches on S1 set data rate, clock source, async./sync. mode and carrier control method. The default settings are summarized in the table below.

MODEL 1065 S1 SUMMARY TABLE			
Position	**Function**	**Factory Default**	
S1-1	Data Rate	On	9,600 bps
S1-2	Data Rate	Off	
S1-3	Data Rate	Off	
S1-4	Data Rate	On	
S1-5	Clock Source	On	Internal
S1-6	Clock Source	On	
S1-7	Async./Sync.	On	Async.
S1-8	Carrier Control	Off	Constantly On

Switches S1-1 through S1-4 & S3-3: Data Rate Setting

Switches S1-1, S1-4, and S3-3 are set in combination to determine the asynchronous and synchronous data rate for the Model 1065.

Shown in the tables below are DIP Switch settings for Models 1065.

MODEL 1065 DATA RATE SETTINGS

S1-1	S1-2	S1-3	S1-4	S3-3	Setting	
On	On	On	On	Off	1.2 kbps	
Off	On	On	On	Off	1.8 kbps	
On	Off	On	On	Off	2.4 kbps	
Off	Off	On	On	Off	3.6 kbps	
On	On	Off	On	Off	4.8 kbps	
Off	On	Off	On	Off	7.2 kbps	
On	Off	Off	On	Off	9.6 kbps	
Off	Off	Off	On	Off	14.4 kbps	
Off	On	Off	On	On	16.0 kbps	*
On	On	On	Off	Off	19.2 kbps	
Off	On	On	Off	Off	28.8 kbps	
Off	Off	Off	On	On	32.0 kbps	*
On	On	Off	Off	Off	38.4 kbps	
Off	On	Off	Off	Off	57.6 kbps	
Off	On	On	Off	On	64.0 kbps	*

* Must have switch 3-3 On

Switches S1-5 and S1-6: Clock Source

Switches S1-5 and S1-6 are set in combination to determine the transmit clock source for the Model 1065 Series.

S1-5	S1-6	Setting
On	On	Internal transmit clock
Off	On	Receive recover clock
On	Off	External transmit clock

Switch S1-7: Asynchronous/Synchronous Mode

The setting for switch S1-7 determines whether the Model 1065 Series is in asynchronous or synchronous operating mode.

S1-7	Setting
On	Asynchronous
Off	Synchronous

Switch S1-8: Carrier Control Method

The setting for switch S1-8 determines whether the carrier is "constantly on" or "controlled by RTS". This setting allows for operation in switched carrier, multipoint and/or hardware handshaking applications.

S1-8	Setting
Off	Constantly on
On	Controlled by RTS

3.3 CONFIGURATION SWITCH SET "S2"

The DIP switches on S2 set word length, extended signaling rate, RTS/CTS delay, V.52 and V.54 diagnostic test and 2- and 4-wire operation.

S2 SUMMARY TABLE

Position	Function	Factory Default
S2-1	Word Length	Off } 10 bits
S2-2	Word Length	Off } 10 bits
S2-3	Extended Signaling Rate	Off -2.5% to 1%
S2-4	RTS/CTS Delay	On } 7 ms
S2-5	RTS/CTS Delay	On } 7 ms
S2-6	2-Wire/4-Wire	On (4-Wire) FDX
S2-7	2-Wire/4-Wire	Off (4-Wire) FDX
S2-8	V.54	Off V.54 Enabled

Switches S2-1 and S2-2: Word Length

Switches S2-1 and S2-2 are set in combination to determine the word length for asynchronous data, including the start and stop bits.

S2-1	S2-2	Setting
Off	On	8 bits
On	On	9 bits
Off	Off	10 bits
On	Off	11 bits

Switch S2-3: Extended Signaling Rate

The setting for switch S2-3 determines the range of variability the Model 1065 Series "looks for" in asynchronous data rates (i.e., the actual variance from a given frequency level the Model 1065 Series will tolerate).

S2-3	Setting
Off	-2.5% to +1%
On	-2.5% to +2.3%

Switches S2-4 and S2-5: RTS/CTS Delay

The combined settings for switches S2-4 and S2-5 determine the amount of delay between the time the unit "sees" RTS and when it sends CTS. Options are no delay, 7 ms and 53 ms.

S2-4	S2-5	Setting
On	On	7 ms
Off	On	53 ms
On	Off	No delay
Off	Off	No delay

Switch S2-6 & S2-7: 2-Wire/4-Wire Mode Selection

The setting for switch S2-6 and S2-7 determines whether the Model 1065 Series is operating in 2-wire or 4-wire mode.

S2-6	S2-7	Setting
On	On	4-wire (half duplex)
On	Off	4-wire (full duplex)
Off	On	2-wire (half duplex)

Switch S2-8: V.54 Loopback Test Enable

This switch enables or disables V.54 looping in the Model 1065.

S2-8	Setting
Off	V.54 Normal Operation Enabled
On	V.54 Testing Disabled

3.4 CONFIGURATION SWITCH SET "S3"

The DIP switches on S3 set the anti-stream control, local loopback enable, remote loopback enable and receive (input) impedance levels for the Model 1065. Factory default positions of Switch S3 are shown in the table below.

S3 SUMMARY TABLE		
Position	**Function**	**Factory Default**
S3-1	Input Impedance	On } 200 Ohms
S3-2	Input Impedance	Off }
S3-3	Timing Mode	Off
S3-4	Topology	On Point to Point
S3-5	Local Loopback	Off Disabled
S3-6	Remote Loopback	Off Disabled
S3-7	Anti-stream Control	Off } Disabled
S3-8	Anti-stream Control	Off }

Switches S3-1 & S3-2: Input Impedance

The setting for Switches S3-1 and S3-2 determines the 1065 Series' input impedance. This allows you to choose the optimum impedance setting for your application. In long distance applications the impedance of the cable must match the impedance of the load (or resistor) of the Model 1065 Series unit. Thicker gauge cables requires a lower Ohm setting, while a thinner gauge cable should receive a higher Ohm setting. If you are using higher speeds you will need a lower Ohm setting, and a higher Ohm setting for the slower speeds. Refer to the table on the following page for assistance in selecting a setting.

S3-1	S3-2	Setting
On	On	130 Ohms
On	Off	200 Ohms
Off	On	320 Ohms
Off	Off	High impedance (minimum 2k ohms)

S3-1, S3-2 SELECTION TABLE FOR MODEL 1065

Gauge of Cable	Data Rates, kb/s											
	1.2	**1.8**	**2.4**	**3.6**	**4.8**	**7.2**	**9.6**	**14.4**	**19.2**	**28.8**	**38.4**	**57.6**
19AWG/.9mm	320	320	200	200	200	200	200	130	130	130	130	High
22AWG/.6mm	320	320	320	200	200	200	200	200	130	130	130	High
24AWG/.5mm	320	320	320	320	200	200	200	200	200	130	130	High
26AWG/.4mm	320	320	320	320	320	200	200	200	200	200	130	High

S3-1, S3-2 SELECTION TABLE FOR MODEL 1065 (CONTINUED)

Gauge of Cable	Data Rates, kb/s		
	16	**32**	**64**
19AWG/.9mm	130	130	High
22AWG/.6mm	200	130	High
24AWG/.5mm	200	130	High
26AWG/.4mm	200	200	High

Switch S3-3: Rate Selection

Use Switch S3-3 to select the timing mode of the 1065. To operate the 1065 at 16, 32, or 64kbps, set S3-3 to the On position. To select any other DTE rate, set Switch S3-3 Off.

S3-3	Setting
On	16, 32, or 64kbps
Off	1.2 - 57kbps, excluding 16 kbps and 32kbps

Switch S3-4: Topology

Use switch S3-4 to select the topology of the Model 1065.

S3-4	Setting
On	Point to point
On	Master multi-point
Off	Slave multi-point

Switch S3-5: RS-232 Initiation of Local Loopback Test

The setting for switch S3-5 determines whether or not the Model 1065 local analog loopback test can be initiated by raising pin 18 on the RS-232 interface.

S3-5	Setting
On	RS-232 initiation enabled
Off	RS-232 initiation disabled

Switch S3-6: RS-232 Initiation of Remote Loopback Test

The setting for switch S3-6 determines whether or not the Model 1065 remote digital loopback test can be initiated by raising pin 21 on the RS-232 interface.

S3-6	Setting
On	RS-232 initiation enabled
Off	RS-232 initiation disabled

Switches S3-7 and S3-8: Anti-stream Control

Switches S3-7 and S3-8 are set in combination to determine the time out period for the Model 1065 Series' anti-stream control timer.

S3-7	S3-8	Setting
Off	Off	Disabled
Off	On	12.5 seconds
On	Off	50.0 seconds
On	On	12.5 seconds

4.0 INSTALLATION

The Model 1065 operates in four twisted pair topologies: 2-wire/point-to-point, 2-wire/multipoint, 4-wire/point-to-point, and 4-wire/multipoint. In each of these topologies, the twisted pair wire must be 19 - 26 AWG "dry", unconditioned metallic wire (see Appendix C for wire recommendations). Dial-up analog circuits, such as those used with a standard Hayes-type modem, are not acceptable. The twisted pair may be shielded or unshielded. Both types yield favorable results.

The Model 1065 offers an RJ-45 jack for its twisted pair line connection. Figure 4 (below) shows the location of these interfaces on the rear panel of the Model 1065 Series. Connect the wire to each Model 1065 Series as described in the instructions that follow the illustration. The "+" and "-" indicators are for reference only.

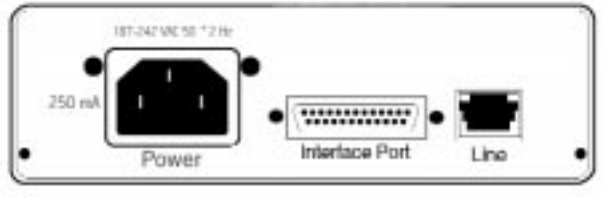


Figure 4. Model 1065 rear panel.

4.1 TWO-WIRE INSTALLATION

When communicating over a single twisted pair circuit, the Model 1065 operates half duplex: that is, it transmits in only one direction at a time. This method of operation is effective for both point-to-point and multipoint applications.

In single pair point-to-point applications, you will need a pair of Model 1065s for each circuit—one at each end of the single pair wire. In single-pair multipoint applications you will need three or more Model 1065 units. These can be connected using a star topology, although a daisy chain topology is usually used.

4.1.1 Two-Wire Cable Connection Via RJ-45

A. The RJ-45 jack on a Model 1065 Series Short Range Modem is prewired for a standard TELCO wiring environment. To be sure you have the right wiring, use the table below as a guide.

RJ-45	SIGNAL
1	NC
2	GND†
3	RCV
4	XMT
5	XMT
6	RCV
7	GND
8	NC

†Connection to ground is optional

B. Proper wiring of pairs between the two modems is as follows:

SIGNAL	PIN#	COLOR*	COLOR	PIN#	SIGNAL
XMT	4	Green	Green	4	XMT
XMT	5	Red	Red	5	XMT

*Standard color codes—yours may be different

C. AT&T standard modular color codes:

1 - Blue
2 - Orange
3 - Black
4 - Red
5 - Green
6 - Yellow
7 - Brown
8 - Slate

4.2 FOUR-WIRE INSTALLATION

When communicating over a two twisted pair circuit, the Model 1065 can operate full or half duplex, point-to-point or multipoint. In two pair point-to-point applications, you will need a *pair* of Model 1065s for each circuit—one at *each end* of the two pair cable. In two pair multipoint applications you will need three or more Model 1065 units. These can be connected using a star topology, although a daisy chain topology is usually used.

4.2.1 Four-Wire Cable Connection Via RJ-45

A. The RJ-45 jack on a Model 1065 Short Range Modem is prewired for a standard TELCO wiring environment. To be sure you have the right wiring, use the table below as a guide.

RJ-45	SIGNAL
1	NC
2	GND†
3	RCV
4	XMT
5	XMT
6	RCV
7	GND
8	NC

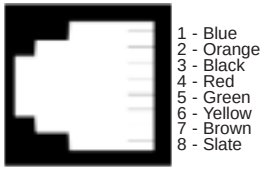
B. Proper crossing of pairs between the two modems is as follows:

†Connection to ground is optional

SIGNAL	PIN#	COLOR*	COLOR	PIN#	SIGNAL
GND†	2	Orange	Brown	7	GND
RCV	3	Black	Green	5	XMT
XMT	4	Red	Yellow	6	RCV
XMT	5	Green	Black	3	RCV
RCV	6	Yellow	Red	4	XMT
GND	7	Brown	Orange	2	GND

*Standard color codes—yours may be different
†Connection to ground is optional

C. AT&T standard modular color codes:



4.3 FOUR-WIRE, MULTIPOINT INSTALLATION

Multipoint operation involves the connection of several terminals to one host port. In such an application, one local Model 1065 is used as a master unit, and it is connected to several remote Model 1065s that are acting as slaves.

In a multipoint environment the master Model 1065 transmits continually. Initiation of two-way communication is RTS controlled by each "slave" Model 1065 unit. To facilitate multipoint communication, the master Model 1065 should have its carrier control DIP switch set to "constantly ON" (S1-8=OFF). Each slave Model 1065 unit should have its carrier control DIP switch set to "controlled by RTS" (S1-8=ON). Figure 5 illustrates a typical Model 1065 multipoint application.

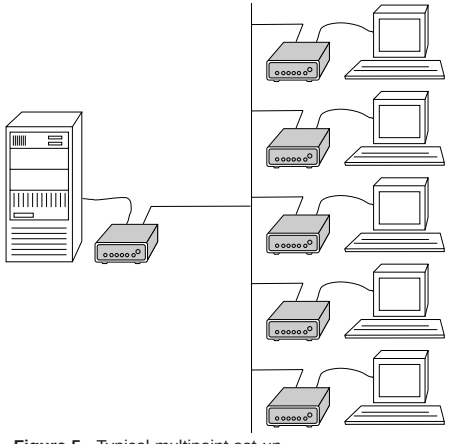
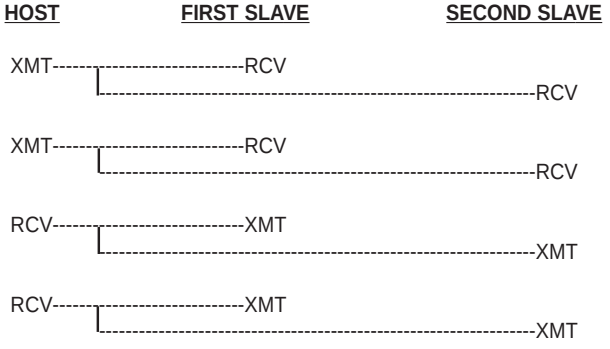
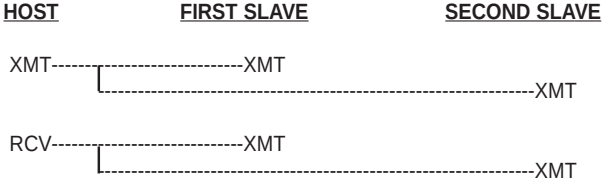


Figure 5. Typical multipoint set-up

4.3.1 Multipoint Twisted Pair Connection

The Model 1065 supports multipoint applications using a star topology. Maximum distance between the units will vary based upon the number of drops, data rate, wire gauge, etc. Call Patton Technical Support for specific distance estimates. Figures 5 and 6 show how to wire the one-pair and two-pair cables properly for a Model star topology. Note that the ground connection is not needed.





4.4 RS-232 CONNECTION

Connect the synchronous or asynchronous output of your RS-232 device to the DB-25 interface on the rear panel of the Model 1065. Note: The Model 1065 is wired to connect to a DTE. If your RS-232 output device is DCE, call Patton Technical Support at: **(301) 975-1007; http://www.patton.com**; or, **support@patton.com** for specific installation instructions.

5.0 OPERATION

Once you have configured each Model 1065 Series unit properly and connected the twisted pair and RS-232 cables (see Section 4.0), you are ready to operate the units. This section describes reading the LED status monitors, powering-up and using the built-in V.52 and V.54 test modes.

5.1 LED STATUS MONITORS

The Model 1065 Series features seven front panel status LEDs that indicate the condition of the modem and communication link. Figure 5 shows the front panel location of each LED. Following Figure 6 is a description of each LED's function.

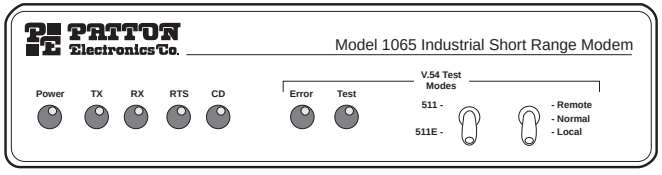


Figure 6. Model 1065 front panel.

5.1.1 The “TD” and “RD” Indicators

The Power LED glows green to signal power present. The “TD” and “RD” indicators blink green with data activity. Off indicates a low RS-232 logic level, green indicates a high RS-232 logic level. Note: RS-232 devices idle in a *low* state, so the LED will be off if the connections are correct and the RS-232 device is in an idle state.

5.1.2 The “RTS” and “CD” Indicators

The “RTS” and “CD” indicators are monocolor and will be off for a “low” signal or green for a “high” signal. RTS lights for an incoming signal on RS-232 pin 4. CD lights for an incoming signal on the line side, and the resulting output signal on RS-232 pin 8.

5.1.3 The “Test” Indicator

The yellow“Test” LED indicates that V.52 or V.54 tests are running.

5.1.4 The “Error” Indicators

The “Error” indicator LED has two functions:

A. When the 1065 unit is in test mode (green “Test” LED is lit), the error LED glows red when bit errors occur.

B. When not in test mode (green “Test” LED is off), the error LED is used to indicate an RTS streaming condition. (See Section 5.2) for information on the anti-streaming circuitry.

5.2 ANTI-STREAMING ERROR INDICATOR

When not in test mode (green “Test” LED is off), the front panel “Error” LED is used to indicate a streaming error. When the Model 1065s’ anti-streaming circuitry is enabled, the RTS signal from the DTE is timer controlled. The timer begins to count when the DTE raises RTS. If the time period that RTS remains high exceeds the preset time out period, the anti-stream circuit will force RTS low. The “Error” LED will light red, indicating a streaming condition (RTS continually on). This feature prevents a malfunctioning terminal from tying-up a computer port in a multi-drop or polling environment. When the DTE drops RTS, the anti-streaming timer is automatically reset and the front panel “Error” LED turns off. The time out period is DIP switch selectable for 12.5 or 50 seconds.

5.3 POWER-UP

Apply AC power to the Model 1065 by plugging the separate AC power cable first into the rear panel of the Model 1065 and then into an acceptable AC power outlet. The remote/normal/loopback switch should be set to “normal”. When the local and remote Model 1065 are poweyellow up, and passing data *normally*, the following LED conditions will exist:

- TD & RD = flashing on and off
- RTS & DCD = green
- TEST = off

5.4 V.54 TEST MODES

The Model 1065 offers two V.54 test modes to evaluate the condition of the modems and the communication link. These tests can be activated physically from the front panel, or via the RS-232 interface. Note: V.54 test modes are available for point-to-point applications only.

5.4.1 Local Analog Loopback (LAL)

The Local Analog Loopback (LAL) test checks the operation of the local Model 1065 Series unit, and is performed separately on each unit. Any data sent to the local Model 1065 in this test mode will be echoed (returned) back to the user device. For example, characters typed on the keyboard of a terminal will appear on the terminal screen. To perform a LAL test, follow these steps:

A. Activate LAL. This may be done in one of two ways: By moving the front panel toggle switch DOWN to "Local" or by raising pin 18 on the RS-232 interface (Note: Make sure DIP switch S2-6 is OFF, and DIP switch S3-5 is ON). Once LAL is activated, the Model 1065s transmit output is connected to its own receiver. The "test" LED should be lit.

B. Verify that the data terminal equipment is operating properly and can be used for a test. If a fault is indicated, call a technician or replace the unit.

C. Perform a BER (bit error rate) or 511/511E test on each unit. If the BER test equipment indicates no faults, but the data terminal indicates a fault, follow the manufacturer's checkout procedures for the data terminal. Also, check the RS-232 interface cable between the terminal and the Model 1065.

5.4.2 Remote Digital Loopback (RDL)

The Remote Digital Loopback (RDL) test checks the performance of both the local and remote Model 1065s *and* the communication link between them. Any characters sent to the remote 1065 in this test mode will be returned back to the originating device. For example, characters typed on the keyboard of the local terminal will appear on the local terminal screen *after* having been passed to the remote Model 1065 and looped back. To perform an RDL test, follow these steps:

A. Activate RDL. This may be done in two ways: By moving the front panel toggle switch UP to "Remote" or by raising pin 21 on the RS-232 interface (Note: Make sure DIP switch S3-6 is ON; and DIP switch S2-6 is OFF).

B. Perform a BER (bit error rate) 511/511E test on the system.

C. If the BER test equipment indicates a fault, and the Local Analog Loopback test was successful for both Model 1065 Series units, you may have a problem with the twisted pair line between the modems. You should then test the twisted pair line for proper connections and continuity.

5.4.3 Using the V.52 BER Test Independently

The V.52 BER test can be used independently of the V.54 loopback tests. This requires two operators: one to initiate and monitor the test at the local Model 1065, and one at the remote Model 1065. To use the V.52 BER test by itself, both operators should simultaneously follow these steps:

1. Locate the “511/511E” toggle switch on the front panel of the unit and move it UP. This activates the V.52 BER test mode and transmits a “511” test pattern to the other unit. If any errors are present, the receiving modem's red “ERROR” LED will blink sporadically. Note: For this test to function, the “511” switch on both Model 1065 units must be on.

2. If the test indicates no errors are present, move the V.52 toggle switch DOWN, activating the “511/E” test with periodic errors present. If the test is working properly, the receiving modem’s yellow “ERROR” LED will blink *regularly*. A successful “511/E” test will confirm that the link is in place, and that the Model 1065s’ built-in “511” generator and detector are working properly.

5.5 POWER-DOWN

Turn off the Model 1065 Series by simply unplugging the AC power cord from the wall. There is no power switch.

APPENDIX A

PATTON ELECTRONIICS MODEL 1065 SPECIFICATIONS

Transmission Format:	Synchronous or asynchronous, 2-wire/half duplex, or 4-wire/full or half duplex
Interface:	RS-232 (CCITT V.24) connection via DB-25 female; twisted pair connection via RJ-45
Transmission Line:	2 or 4-wire UTP, 19 - 26 AWG
Data Rates:	**Model 1065 -** Synchronous or asynchronous at 1.2, 1.8, 2.4, 3.6, 4.8, 7.2, 9.6, 14.4, 19.2, 28.8, 38.4, 57.6 and 64 kbps—switch selectable;
Clocking:	Internal, external or receive recover
Controls:	Carrier constantly “ON” or “controlled by RTS”; RTS/CTS delay set to no delay, 7 or 53 ms
Applications:	Point-to-point or multi-point
Indicators:	Mono-color LED indicators for TD, RD, RTS & DCD; single LED indicators for Power, Test, and Error
RTS Anti-stream Timer	12.5 sec., 50 sec., or disabled (switch selectable); tolerance: +50%, -0
Diagnostics:	V.52 compliant bit error rate pattern (511/511E pattern) generator and detector with error injection mode; V.54 compliant—Local Analog Loopback and Remote Digital Loopback, activated by front panel switch or via RS-232 interface
Transformer Isolation:	2000 V RMS
Surge Protection:	Immune to IEC-801-5 Level 2, 1kV
Temperature:	-10°C to 70°C
Humidity:	100% condensing from -10°C to +30°C Absolute humidity from +30°C to +70°C
Dimensions:	5.5” (W) X 7.5” (D) X 1.6” (H) (13.9 cm X 19 cm X 4 cm)
Power Supply:	157-242 VAC Universal Interface

APPENDIX B

PATTON ELECTRONICS MODEL 1065 FACTORY REPLACEMENT PARTS AND ACCESSORIES

Patton Model #	Description
0805FR	France/Belgium Power Cord
07M1065	Model 1065 Series User Manual

APPENDIX C

PATTON ELECTRONICS MODEL 1065 CABLE RECOMMENDATIONS

All Patton Electronics Company Short Range Modems are tested to the distances published in our Catalogs and Specification Sheets on twisted-pair cable with the following characteristics:

Wire Gauge	Capacitance	Resistance
19 AWG(.9mm)	83nF/mi or 15.72 pF/ft.	.0163 ohms/ft.
22 AWG(.6mm)	83nF/mi or 15.72 pF/ft.	.0326 ohms/ft.
24 AWG(.5mm)	83nF/mi or 15.72 pF/ft.	.05165 ohms/ft.
26 AWG(.4mm)	83nF/mi or 15.72 pF/ft.	.08235 ohms/ft.

We fully expect that the Short Range Modems will operate on lines with specifications different from those tested, but to reduce the potential difficulties in the field, one should ensure that the cable being used has similar or better characteristics (lower capacitance or lower resistance).

Model 1065 RC Distance Table - Miles (KM)			
Data Rate (kbps)	Wire Gauge (AWG/mm)		
	22 (.6mm)	24 (.5mm)	26 (.4mm)
12	119 (192)	98 (158)	72 (116)
18	116 (186)	87 (140)	70 (113)
24	111 (180)	80 (128)	66 (107)
36	104 (168)	76 (122)	625 (101)
48	97 (155)	69 (111)	59 (94)
72	91 (146)	66 (107)	49 (79)
96	76 (122)	625 (101)	45 (73)
144	74 (119)	52 (84)	40 (64)
16	72 (116)	51 (82)	38 (61)
192	68 (110)	49 (79)	36 (58)
288	60 (96)	38 (61)	30 (49)
32	57 (91)	36 (58)	28 (46)
384	47 (76)	32 (52)	22 (37)
576	34 (55)	27 (43)	19 (30)
64	25 (40)	23 (37)	13 (21)

Wire with capacitance of 20pF/ft. or less is suitable for all our Short Range Modems however, distances may vary from those published in our catalog. Resistance will also affect distance but not functionality. Wire should be 26 AWG (.4mm) or larger (smaller AWG#).

Patton products are designed to withstand normal environmental noise and conditions however, other environmental factors too numerous to discuss in this format may affect proper operation of the SRM's.

Selection of the proper SRM for an application is critical to maintaining Customer Satisfaction and should be taken seriously. Certain models are better suited for particular applications and environments than others.